



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Mark S. Moir et al.

Title:

SPACE-AND-TIME-ADAPTIVE NONBLOCKING ALGORITHMS

Application No.: 10/621,078

Filed:

July 16, 2003

Examiner:

Unassigned

Group Art Unit: 2184

Atty. Docket No.: 004-8193

September 27, 2004

Mail Stop Amendment COMMISSIONER FOR PATENTS P.O. Box 1450 Alexandria, VA 22313-1450

## INFORMATION DISCLOSURE STATEMENT 37 C.F.R. § 1.97(b)

Dear Sir:

Pursuant to 37 C.F.R. § 1.56, § 1.97 and § 1.98, the undersigned brings the patents, publications, applications or other information identified in the attached:

$\boxtimes$	Form(s) PTO-1449 (2 pages), including copy(ies) of 33 reference(s).
	Other: n/a

to the Examiner's attention in the above-identified application. Citation of such information shall not be construed as:

- 1. an admission that the information necessarily is, or corresponds to, prior art with respect to the instant invention;
- 2. a representation that a search has been made, other than as described below; or
- 3. an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

Pursuant to 1276 OG 55 (August 5, 2003), Information Disclosure Statements may be filed without copies of U.S. Patents and Published Applications in Patent Applications filed after June 30, 2003.

For each item of information listed that is not in the English language, the undersigned has provided a concise explanation of the relevance through (i) an English language abstract, (ii) an English language equivalent application, or (iii) if cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action that indicates the degree of relevance found by the foreign office.

## FEE AUTHORIZATION

	ILL AU	HIORIZATION
	date of a national application of § 1.53(d) or within three mont	tatement is filed within three months of the filing other than a continued prosecution application under hs of entry of the national stage as set forth in lication. Therefore, no fee is required.
	before the mailing date of a fir	this Information Disclosure Statement is being filed st Office action on the merits or before the mailing er the filing of a request for continued examination fee is believed required.
	specified in § 1.97(b), the under	ersigned hereby authorizes the Commissioner to 17(p) to Deposit Account No. 50-0631.
<b>CERTIFICATE</b>	OF MAILING OR TRANSMISSION	Respectfully submitted,
I hereby certify that, correspondence is be	on the date shown below, this	
as first class/mai	le US Postal Service with sufficient postage I, in an envelope addressed to Commissioner Box 1450, Alexandria, VA 22313-1450.	David W. O'Brien, Reg. No. 40,107
facsimile transm	itted to the US Patent and Trademark Office.	Attorney for Applicant(s)
		(512) 338-6314 (512) 338-6301 (fax)
David W	O'Brien Date	(312) 330-0301 (1ax)

EXPRESS MAIL LABEL:

				——————————————————————————————————————	<del></del>	
U.S. Departm	ent of Co	mmerce, Patent and Tr	ademark Office	Attorney Docket No.:	004-8193	
				Application No.:	10/621,078	
1PE	FORMA	TION DISCLOSURE	Applicant(s):	Moir et al.		
/0 .	~C.	(Use several sh	eets if necessary)	Filing Date:	July 16, 2003	
rco 7 9	2006 14		·	Group Art Unit:	2184	
251 1	<u>```</u>	· · · · · · · · · · · · · · · · · · ·		Date Submitted:	September 27, 2004	
ŽŽ. 2040	· KET		NON PATENT LITERATURE DO	OCUMENTS		
*Examiner Initial	Cite No.	(Includin	ncluding name of author in capital letters, title of article, title of item, date, pertinent pages, volume-issue number(s), publisher, city and/or country where published.)			
	1	Afek, Yehuda et al., "Long-Lived Renaming Made Adaptive", 18th Annual ACM Symposium on Principles of Distributed Computing, pages 91-104, 1999.				
	2	Afek, Yehuda, "Wait-Free Made Fast", 27th Annual ACM Symposium on Theory of Computing, pages 538-547, 1995.				
	3	Agesen, Ole et al., "DCAS-Based Concurrent Deques", 12 <sup>th</sup> Annual ACM Symposium on Parallel Algorithms and Architectures, pages 137-146, July 2000.				
Anderson, James H. et al., "Using Local-Spin k-Exclusion Algorithms to Improve Wait-Implementations", 12 <sup>th</sup> Annual ACM Symposium on Principles of Distributed Computing (revised 1996, 1997).						
	5	Arora, Nimar S. et al., "Thread Scheduling for Multiprogrammed Multiprocessors", 10 <sup>th</sup> Annual ACM Symposium on Parallel Algorithms and Architectures, pages 119-129, 1998.				
	6	Attiya, Hagit et al., "An Adaptive Collect Algorithm with Applications", Dept. of Computing Science, The Technion, Israel, May 10, 2001.				
	7	Barnes, Greg, "A Method for Implementing Lock-Free Shared Data Structures", 5 <sup>th</sup> Annual ACM Symposium on Parallel Algorithms and Architectures, pages 261-270, 1993.				
	8	Bayer, R. et al., "Concurrency of Operations on B-Trees", Acta Informatica, 1977.				
	9	Detlefs, David L. et al., "Even Better DCAS-Based Concurrent Deques", 14 <sup>th</sup> International Conference on Distributed Computing, pages 59-73, 2000.				
-	10	Detlefs, David L. et al., "Lock-Free Reference Counting", 20th Annual ACM Symposium on Principles of Distributed Computing, pages 190-199, 2001.				
	11	Dice, David et al., "Mostly Lock-Free Malloc", ACM 2002.ACM SIGPLAN International Symposium on Memory Management, June 2002.				
	12	Greenwald, Michael B., "Non-Blocking Synchronization and System Design", PhD Thesis, Stanford University Technical Report STAN-CS-TR-1624, Palo Alto, California, August 1999.				
	13	Herlihy, Maurice, "A Methodology for Implementing Highly Concurrent Data Objects", ACM Transactions on Programming Languages and System, pages 745-770, November 1993.				
	14	Herlihy, Maurice, "Dynamic-Sized Lockfree Data Structures", Sun Microsystems Technical Report SMLI TR-2002-112, June 2002.				
· · · · <u>· · · · · · · · · · · · · · · </u>	15	Herlihy, Maurice et al., "Linearizability: A Correctness Condition for Concurrent Objects", ACM Transactions on Programming Languages and Systems, pages 463-492, July 1990.				
Herlihy, Maurice et al., "The Repeat Offender Problem: A Mechanism for Supporting Dynam Free Data Structures", Sun Microsystems Technical Report SMLI TR-2002-112, June 2002.						
Examiner Date Considered				<del></del>		

EXAMINER:	Initial if r	eference considered, whet	her or not citation is in conformance with MPEP	609; Draw line through citation	if not in conformance and n	
Examiner			ACM SIGACT-SIGMOD-SIGART Syn  Date Considered			
	32	Trieber, R, "Systems Programming: Coping with Parallelism", IBM Technical Report RJ5118, April 23, 1986.  Turek, John et al., "Locking without Blocking: Making Lock Based Concurrent Data Structure Algorithms				
	31	Shavit, Nir et al., "Software Transactional Memory", Distributed Computing, Special Issue (10), 1997.  Tripher P. "Systems Programming: Coping with Paralleliam", IPM Tooknigs! Penart P.15118, April 22				
	30	Saks, Michael et al., "Optimal Time Randomized Consensus - Making Resilient Algorithms Fast in Practice", 2 <sup>nd</sup> ACM SIAM Symposium on Discrete Algorithms, pages 351-362, 1991.				
	29	Moir, Mark et al., "Wait-Free Algorithms for Fast, Long-Lived Renaming", Science of Computer Programming, August 1994.				
	28	Moir, Mark, "Transparent Support for Wait-Free Transactions", 11th International Workshop on Distributed Algorithms, 1997.				
	27	Moir, Mark, "Practical Implementations of Non-Blocking Synchronization Primitives", 16 <sup>th</sup> Annual ACM Symposium on Principles of Distributed Computing, 1997.				
	26	Moir, Mark, "Laziness Pays! Using Lazy Synchronization Mechanisms to Improve Non-Blocking Constructions", 19 <sup>th</sup> Annual ACM Symposium on Principles of Distributed Computing, 2000.				
	25	Michael, Maged M., "Safe Memory Reclamation for Dynamic Lock-Free Objects Using Atomic Reads and Writes", 21st Annual ACM Symposium on Principles of Distributed Computing, pages 21-30, January 2002.				
	24	Michael, Maged M. et al., "Simple, Fast and Practical Non-Blocking and Blocking Concurrent Queue Algorithms", 15 <sup>th</sup> Annual ACM Symposium on Principles of Distributed Computing, pages 267-276, 1996.				
	23	Michael, Maged M. et al., "Non-Blocking Algorithms and Preemption-Safe Locking on Multiprogrammed Shared Memory Multiprocessors", Journal of Parallel and Distributed Computing, March 1997.				
	22	Martin, Paul et al., "DCAS-Based Concurrent Deques Supporting Bulk Allocation", Sun Microsystems, Inc. Technical Report SMI TR-2002-111, October 2002.				
	21	Luchangco, Victor et al., "Nonblocking k-compare-single-swap", 15 <sup>th</sup> Annual ACM Symposium on Parallel Algorithms and Architectures, June 2003.				
	20	Lamport, Leslie, "How to Make a Multiprocessor Computer that Correctly Executes Multiprocess Programs", IEEE Transactions on Computers, September 1979.				
	19	Israeli, Amos et al., "Disjoint-Access-Parallel Implementations of Strong Shared Memory Primitives", 13 <sup>th</sup> Annual ACM Symposium on Principles of Distributed Computing, pages 151-160, 1994				
	18	Herlihy, Maurice et al., "Obstruction-Free Synchronization: Double-Ended Queues as an Example", 23 <sup>rd</sup> International Conference on Distributed Computing, May 2003.				
	17	Herlihy, Maurice et al., "Transactional Memory: Architectural Support for Lock-Free Data Structures", 20 <sup>th</sup> International Symposium in Computer Architecture, 1993.				
*Examiner Initial	Cite No.	t a series of the series of th				
	<del></del>		NON PATENT LITERATURE DOCI	UMENTS		
				Date Submitted:	September 27, 2004	
<del></del>				Group Art Unit:	2184	
			eets if necessary)	Filing Date:	July 16, 2003	
IN	FORM A	TION DISCLOSURE	STATEMENT BY APPLICANT	Application No.: Applicant(s):	10/621,078 Moir et al.	
				Application No.	10/621 079	